Math 220 (Section AD3)  
Quiz 1  
Spring 2012

Name ____________________________

• No calculators allowed.
• Show sufficient work to justify each answer.
• You have 15 minutes for this quiz.

1. (3 points) Suppose \( f(x) = \sqrt{9 - x} \) and \( g(x) = x^2 \). What is the domain of the composite function \((f \circ g)(x)\)?

\[ f \circ g(x) = f(g(x)) = f(x^2) = \sqrt{9 - x^2} \]

\[ \text{Domain } f \circ g = \mathbb{R} = \text{all real numbers} \]

\[ \text{Domain } f \circ g : \quad \text{Need: } \quad 9 - x^2 \geq 0 \]
\[ 9 \geq x^2 \]
\[ 3 \geq x \]
\[ -3 \leq x \leq 3 \]

\[ \text{Hence, domain } f \circ g \text{ is } -3 \leq x \leq 3 \text{ or } [-3, 3] \]

2. (2 points) Evaluate the quantity \( \cos(-2\pi/3) \).

\[ \text{Method 1} \]
\[ \cos(-\frac{2\pi}{3}) = \cos\frac{2\pi}{3} \quad (\text{since cos even}) = -\frac{1}{2} \]

\[ \text{Method 2} \]
\[ \cos(-\frac{2\pi}{3}) = -\frac{1}{2} \]
3. (2 points) Given that $\cos \theta \approx 0.983$, $\sin \theta \approx 0.184$ and $\tan \theta \approx 0.187$, evaluate $\cos(\pi - \theta)$.

$$\cos(\pi - \theta) = -\cos \theta = -0.983$$

Note: $\cos \theta > 0$, $\sin \theta > 0$, $\tan \theta > 0$
Hence $\theta$ is in the first quadrant.

4. (3 points) Carefully sketch the graph $y = 2|x+3| + 1$. If there are any horizontal or vertical intercepts, then their location should be accurately shown on your graph.

**Step 1**

$y = |x|$

**Step 2**

$y = |x+3|$

**Step 3**

$y = 2|x+3|$

**Step 4**

$y = 2|x+3| + 1$